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Insulation element

Abstract

The invention relates to an insulation element (1) with a layered build-up consisting of a nonwoven and of a sheathing by film plies (2, 2').

Description

The invention relates to an insulation element.

Such insulation elements have already become known in various forms. However, the known insulation elements are not satisfactory in every respect in terms of the various requirements, such as low weight, high sound and, if appropriate, also heat insulation and also handling as an installation element.

The invention is therefore concerned with the technical problem of making available an insulation element which, along with low weight, is as effective as possible.

This technical problem is solved in the first place, and essentially, in the subject matter of Claim 1, the aim of this being that the insulation element consists of nonwoven and of a sheathing by film plies. The nonwoven is very light-weight, by having a comparatively large volume. The nonwoven or the foam material described below is selected such that there is no risk to health during production, processing and operation or during supply. There are relatively large interspaces between the fibres. The nonwoven may consist, for example, of a needle-punched nonwoven of low density. The film plies are outer plies. This results, as it were, in a cushion formed with an envelope formed by the films. An impact filling may be afforded. The films are selected in terms of their water vapour resistance coefficient. Particularly preferably, a film has high water vapour density on one side and low water vapour density on the other side. All this is to ensure that, in the installation situation, no or virtually no liquid-water formation occurs. The film plies may be provided not only as outer plies, but also as intermediate plies. Further, the film plies, in any event the outer film plies, are preferably edge-welded. It is also important, for the article, that, in any event, one of the films is a thin membrane film which is permeable to water vapour. The other film is then preferably tight to water vapour.

In contrast to the embodiment described above, the invention also comprises an insulation element with a foam material ply, consisting of polyimide, as a board article. The other features described above, with the exception of the features relating to the nonwoven, may also in this case be employed.

Furthermore, the invention is explained below with reference to the accompanying drawing which, however, illustrates merely one exemplary embodiment.

The single figure shows a partially cut away perspective view of an insulation part.

The insulation part 1 consists of a lower and an upper covering film 2 and 2' and of a nonwoven 3 received between them. The nonwoven is a needle-punched nonwoven and may consist of a linear polymer, such as, for example, PPS. Furthermore, it may also consist of a mixture of PPS and of other organic polymers. The surface weight of the nonwoven may lie between 200 and 800 g/m².

The fibres of the nonwoven 3 are thermoplastic and inherently fireproof. Moreover, it also preferably has a hydrolysis-resistant finish. The overall composite structure absorbs and insulates acoustically. Moreover, it is also heat-insulating. Further, the fibres are also resistant to ageing.

The thickness of the nonwoven ply 3 lies in the range of 2 to 8 cm, preferably around 5 cm.

The thickness of the film plies 2 and 21 (they are depicted as being thicker merely for clarity in the drawing) lies between 10 and 50 µm, preferably around 20 µm. The density of the film plies 2, 2' lies around 0.9 to 1.4 g/cm³. The film plies 2, 2' are likewise thermoplastic and hydrolysis-resistant. With regard to the film plies 2, 2', these may materially be aluminized polyethylenes or else inherently fireproof polymers. As is illustrated further in the drawing, fibres, for example glass fibres, may be laminated on the film. The fibres are indicated by the grid in the drawing. However, they are preferably provided on only one side of the film. The grid is between 1 and 5 mm. Fibres running transversely with respect to one another are provided in each case.

In particular, one of the films 2, 2' may be permeable to water vapour, while the other is virtually impermeable to water vapour.

A further exemplary embodiment, not illustrated separately in the drawing, relates to an insulation part of this type with a foam material ply. In this case, the nonwoven ply 3 is replaced by a polyimide board stock. The above statements relating to this embodiment otherwise also apply.

Patent Claims

1. Insulation element (1), **characterized by** a layered build-up consisting of nonwoven and of a sheathing by film plies (2, 2').
2. Insulation element (1), characterized by a layered build-up consisting of foam material in the form of polyimide board stock and of a sheathing by film plies (2, 2').
3. Insulation element according to one of the preceding claims, characterized in that the film plies (2, 2') are outer plies.
4. Insulation element according to one of the preceding claims, characterized in that the outer film plies (2, 2') are edge-welded, and in that the overall composite structure is thereby held together.
5. Insulation element according to one of the preceding claims, characterized in that the film plies (2, 2') are membrane films permeable to water vapour.
6. Insulation element according to one of the preceding claims, characterized in that the nonwoven is a needle-punched nonwoven.

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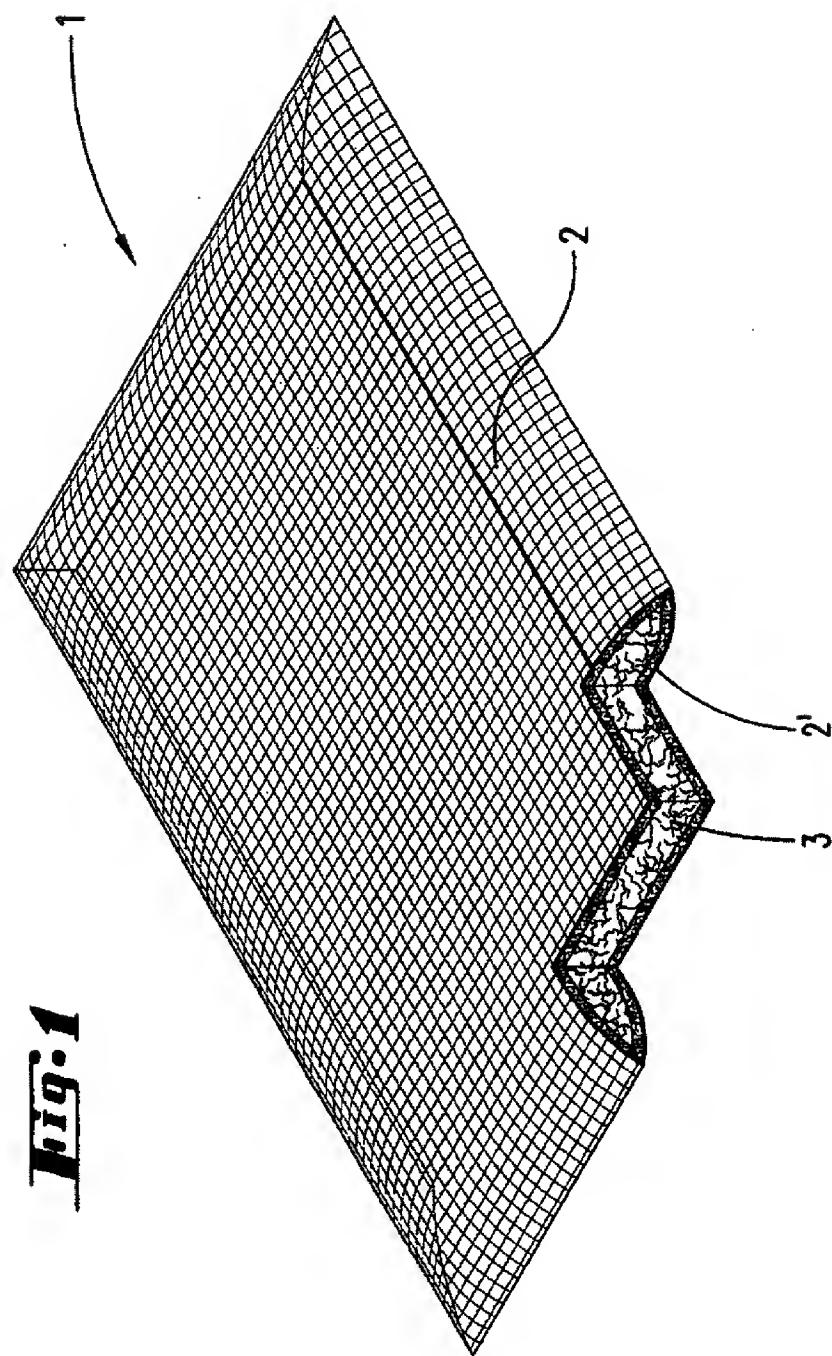


Fig:1